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ABSTRACT

This study was designed to evaluate: (1) the content of the primary I-III science curriculum in Somalia; (2) the instructional materials that back up the content and methodologies; and (3) the professional competence of the teachers in charge of teaching this subject. Data were collected by means of a questionnaire, observations, and unstructured interviews from teachers, inspectors and curriculum developers in rural and urban schools. Findings indicate that the curriculum is poorly taught in all the 50 schools examined. Specifically: the level of content is difficult for students to grasp; textbooks, which have few illustrations, are not available for all students; the level of language used in the textbooks is difficult; improvisation of such materials as textbooks and teaching aids is inadequate; the school environment is not used; teachers are crash-trained and their level of knowledge is below average; and teachers are not offered retraining courses. Based on these and other findings several recommendations are offered. They include reviewing the primary I-III syllabus in terms of topics and difficult concepts, providing primary teachers with greater background in science, and utilizing laboratories in teacher training colleges. (JN)

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No. 83

AHMED ALI ABDI:

REVISION OF PRIMARY SCIENCE CURRICULUM
IN SOMALIA.

AOS Project

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P.O.Box 54645, Nairobi

This research project was undertaken as part of a training programme jointly organised on behalf of the African Curriculum Organisation (ACO) by the Kenya Institute of Education (KIE), the University of Nairobi, and the German Agency for Technical Cooperation (GTZ).

REVISION OF PRIMARY I-III SCIENCE CURRICULUM IN SOMALIA.

BY

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B.S.c. SOMALI NATIONAL UNIVERSITY

SUBMITTED TO THE FACULTY OF EDUCATION OF THE UNIVERSITY OF NAIROBI IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE POSTGRADUATE DIPLOMA IN CURRICULUM DEVELOPMENT.

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TABLE OF CONTENT

Acknowledgements----------(ii)
Table of contents----------(iii)
Chapter I. Statement of the problem----------(1)
1.1. Background----------(1)
1.2. Purpose of the study----------(6)
1.3. Significance of the study----------(6)
1.4. Review of the literature----------(7)

Chapter II. Design of the study----------(16)
2.1 Description of population and sampling----------(16)
2.2 Instruments of data Collection----------(19)
2.3 Administration of the questionnaries----------(21)

Chapter III. Data Analaysis----------(22)
3.1. Results of Question one----------(22)
3.2. Results of Question two----------(23)
3.3. Results of Question Three----------(23)
3.4. Results of Question Four----------(24)
3.5. Results of Question Five ----------(25)
3.6. Results of Question Six----------(25)
3.7. Results of Question Seven----------(27)
3.8. Results of Question Eight----------(27)
3.9. Results of Question Nine----------(28)
3.10.Results of Question Ten----------(28)
3.11.Results of Question Eleven----------(29)
3.12.Results of Question Twelve----------(29)
3.2.1.Responses from classroom observation----------(31)
3.2.2.Halane Observation----------(32)

Chapter IV. Summary and Recommendation----------(38)
4.1. Summary----------(38)
4.2. Summary of Findings----------(39)
4.3. Recommendation----------(40)
4.4. Recommendation of Primary I-III Science--------(41)

Appendice

Questionnaires for the teachers----------(43)
Primary School: Integrated Curriculum----------(49)
Reference----------(50)

CHAPTER I

STATEMENT OF THE PROBLEM

1.1. Background

In the past, before the Italian and British came a Somalia child was educated in the traditional way. The aim of education then was to make the boy or the girl a fully functioning member of the community, learning those skills that were necessary for the community to survive, the curriculum then was made up of subjects such as animal husbandry, physical training, History, Geography poetry, arts and crafts, Home Economics. Although there were no formal schools teaching and learning took more in a non-formal manner.

Children were taught "on-the-job", learning through practical experience which enables learners to acquire the expected skills is the best way to learn.

Then the colonial powers came and Introduced such subjects as mathematics, Reading and Writing. These subjects are in themselves good (and very important in Modern Society), but they were introduced in languages foreign to our pupils. And because pupils did not understand most of what was being taught, a very bad habit developed which is still with us - memorization without understanding

After 1969 the revolutionary government took 3 major decisions which have had a very big impact on the school curriculum. A Somali script was agreed upon, the Somali language was declared to be the medium of instruction and the content of the curriculum was changed to reflect Somali culture, traditions, and way of life. Education became a democratic right, Although there are always problems when one changes from the old to the new, it can be said that education in Somalia is on the right road.

The decision to reform the curriculum, meant that programs were drawn up to drastically change previous curricula and syllabi, to write new textbooks in Somali for all grades, to evolve new methods of teaching and adopt new approaches to teachers preparation.

So in preparation of this change certain problems had come out in the fulfilment of the curricula and syllabi.

These problems were:

(i) Since the curricula and syllabi have drastically changed, the primary I-III science curriculum was so limited (e.g. in content).

(ii) The curricula and syllabi of primary I-III Science had become too theoretical rather than demonstrative and environmentally oriented.

(iii) Its level was too high for primary III and therefore it was too difficult for the children to understand its concepts.

(iv) Finaly the primary I-III had no adequate instructional materials, or the school environment had no resource at all (e.g. garden).

The Importance of functional primary science education as an essential factor in development was recognized in principle by the Somali government, but concrete steps to Implement this principle and to give primary science education its rightful place as a force for change and for the amelioration of individual and social problems were lacking, so it was convenient to apply a problem solving approach to all investigation and identify the major factors of, and develop and use appropriate skills and technologies for solving the problem. Without doubt the study and the acquisition of knowledge of pupils in Science was decisive phase in the process of science education.

It imparted meaning to the concept of integration with orientation towards concrete objective. Because Somali economy was largely based on agriculture and livestocks, the government had planned to achieve qualitative imporvement in primary science education through curricula consolidation with emphasis upon agricultural bias and animal husbandry.

The quality of the education system of a country is influenced by the quality of its teachers, the size of its classes and the schools' infrastructure. All these help to determine the success or failure of any curriculum. The effective use of the science curricula to bring about improvement in the pupils science knowledge at primary school is important in their understanding of the most complex concepts of science later in secondary and university education.

Environment is an important factor to the physical and mental growth of the child, and because of that education should be based on the child's physical and social environment. By learning from his own ets, the child in his life experiences can make meaningful selection and at the same time bring about the necessary improvement to his community as regards to his mode of life. The intention is not to confine the pupil to his limited environment only, but provisions must be made to give him a wise outlook of the culture, science and technologies of the other peoples of the world.

The curricula passed to children cannot be worthwhile unless its content is designed to answer the specific needs of the nation. Having this in mind, it was important to have dynamic curricula rooted in Somali culture and environmental realities. So the need of review to curriculum gives a special emphasis to directing the child's outlook his environment. The type of scientific knowledge which enables

the pupil to become into self-reliant in thinking, creativity should be built into the curriculum. Through such kcowledge, the pupil would be better able to widen his science horizon and therefom better able to solve problems scientifically. The content of the curriculum, its method and instructional materials do facilitate the easy acquisition of such knowledge.

The introduction of Somali as the medium of instruction and the resetting of the curriculum necessitated two action, one, that all textbooks for all levels of education be written in Somali, and two, that textbooks authors be Somalis because of the convinction that no foreigner would be able to write environmental - oriented textbooks. Textbooks written in primary science I-III have proved very theoretical although very limited in content. These limitations, now render them inadequate which necessitated them reviewed. Such a review called for broadening thier content and making them more environmentally based. The diagram, and illustration in the books were not appropriate toos as aids to putting accross the planned lesson outcomes and so they also required review. Science textbooks in this stage should provide the learner with sufficient scope for Independent work.

In this article (the reader passport), Richard Bamberger supports methods of teaching which promote Independent work when write,

> "The goal of the modern teaching program is to move away from old fashions, methods of instruction, in which the teacher, at the head of the classroom, pumps his pupils full information and towards methods which donnot promote Independent work according to the abilities of the child. Today the development of Interest is emphasized instead of information and knowledge itself and teaching children to work independently with books is one means of achieving this aim".

Books are very important because learning is a life long process - when children leave school, they should be able to continue to learn on their own.

Programs may differ with respect to the role played by the teacher in thier development and information. Some programs are arranged so as to provide the learner with clear guidelines that can almost be used as self-instructional materials. In other programs the teacher is expected to assume greater responsibility for explaining the material and structuring learning activities.

Another difference that may appear concerning the role of the teacher is in the degree of the participation in the program development. Some programs are fully developed by the curriculum team, and the teacher is required only to use and interpret the programs for the pupils. In this cases, the teacher assumes the role of mediator between pupils and program, since without the help of the teacher the pupil connot achieve the goals of the program. Other programs are semi-structured, or even structured, frequently the teacher may be required to gather additional materials himself. In this way the teacher becomes a partner as coworker in the process of program development. Today our primary science teachers are poor in quality and need better training so that they may fully develop and implement educational programmes. So the review of the quality of the teachers in primay science is also important. There is insufficiency in teaching aids and the quality and conditions of the teacher in the schools.

1.2. Purpose of the Study

When the curriculum content, the quality of the teachers and the quantity and quality of the Instructional Materials did not satisfy the learning needs of the pupils, there was something seriously wrong with that curriculum. Such a curriculum should be subject to review.

The purpose of the study then was :

(1) To evaluate the content of the present science curriculum for primary I-III in Somalia with a view to determining its strengths and weaknesses in respect to relevance.

(2) To find out how relevant the teaching resources that support the learning-teaching process are in playing the designed role.

(3) To assess the qualitative suitability of the primary Science teachers.

1.3. Significance of the study

This study is found to be important in many ways, Firstly, this study will help concerned educators, curriculum planners and Ministry officials to be conscious of the problems connected with science primary teaching in Somalia. Secondly, the results of this research would serve as a guide in improving science teaching according to the pupil level of understanding. Thirdly, the writer feels that the final results of the Investigations into the problem would funish possible solutions to the present problems of primary science in Somalia. Fourthly, the study will serve as a foundation and as stepping stone for further study of the problem and for generating other studies.

Finally, there was hardly any literature on this subject in Somalia, only a few writing on primary science education exist in Somalia. It is thus hoped that this research would make an important contribution to the curriculum program and the teaching primary science in Somalia.

1.4. Review of the Literature

THE AFRICAN PRIMARY PROGRAM (APSP) AND THE SCIENCE EDUCATION PROGRAM FOR AFRICA (SEPA).

The prime goal of the program was to help develop processes of scientific thinking in children. It was not sufficient to describe the chain of cause and effect nor only to observe it. Wherever possible, the pupil would intervene with his own thoughts, his own hands and his own will to learn.

The following criteria for selection of content were also set.

1. Wherever facts are presented they should be discoverable by the student.

2. Facts selected should be of critical value importance to understanding of a principle.

3. Content should help to show science proceeds through method of discovery.

4. It must be cheap to do, cheap to find out, economical in time as well as money.

The sociological Aspect of the African Science Program (APSP)

One of the basic problems of the African societies is educational development, with particular emphasis on Scientific and technological education. What are the Implication of the Introduction of the Natural Science and Mathematics in African Primary Science School? Answer to this question must be furnished by eductors and social scientists, before we conventure successfully into the educational innovation. The basic assumption underlying the Introduction of science early in the primary school is that it will not only improve the mental capabilities of the African populations but will produce specialised skills in serving the need of the African societies as they undergo technological transformation.

Structure of the Teaching Profession.

There has been a sudden increase in the number of teachers, accompanied by profound changes in the structure of the primary-school personnel, but this development is still well below requirments. Although the number of qualified teachers has increased in absolute terms, it has dropped considerably in relation to the number of teachers. The best of the former have left teaching for other work, either political, diplomatic or administrative.

In view of the heavy increase in school attendence and the corresponding drop in the number of competent teachers, the level of teaching has been lowered. As long as the increase in school attendence continues within educational system whose stucture is unchanged, whose final aims are uncertain and whose recruitment results in unqualified teachers, there can be no discussions or progress in school attendence, unless the purpose is to compare erroneosly between various statistical tables. For very different results will be obtained depending on whether one puts a hundred pupils in one class or in two parallel classes, mixes the young with the oldest or keep the classes homogenous, entrusts the pupils to the core of un-properly trained teacher or a beginner, has them follow a curriculum which may or may not be adopted to their needs, or teaches exclusively from the books or employs new techniques and methods which involves the participation of the pupils themselves.

Qualitative aspect.:

How can further training courses take account of curriculum and policy changes, and to what extent can the timing of such courses be adjusted to the timing of major changes envisaged? In some countries, teachers completing a further training course have found themselves unable to apply the mathematics and science syllabuses adopted during their absence. The importance of the close link which exists between curriculum planning and teacher training cannot be overemphasized. If the content of teaching programmes has ceased to be valid in its existing substance and form, and if it needs revision, what sectors should be revised or clarified? What specific items in the programmes should be utilized for training, further training and retraining of teachers at the various levels, bearing in mind the different degrees of priority in the plan as a whole?

This raises a series of questions. Which teachers (at what cultural and professional level) are to be trained? And by whom? What is to be taught (the content of teaching programmes) and for what purpose (the ultimate teaching goal)? What methods and what resources are to be used?

Which teachers are to be trained? A field survey will be necessary, taking a representative sample of each category of teachers (monitors, instructors, primary teachers). It should then be possible to base a judgement on these five main points.

What curricula are taught by the teachers? Do the programmes conform with government decisions on principle? Do they offer a form of education suited to the actual conditions of a basically rural Africa and do they adapt to the requirements of economic and social development including the industrial factor? Are the curricula suited to the pupil level and to his social and cultural background, or are they little more than a faithful copy of an imported model?

Do the textbooks correspond to the time-tables and curricula? Are they satisfactory and sold at a reasonable price?

All these questions must be analysed, because the sole reason for training and further training of teachers is to improve the over-all quality which must also depend on the relevancy of curricula, methods, textbooks and teaching aids employed. The two problems cannot be kept apart. If methods are changed and textbooks subsequently published, the training curricula will have to correspond to these changes.

What educational methods are used? What are the proffessional and pedagogical activities of the teachers? What teaching aids are normally available to them? There are two key questions to be asked before any results can be evaluated: "How is the lesson taught by the teacher?" and "How is it received by the pupils?" An entire system of teaching methods must be worked out before we can assess such notions as progress in teaching, pupil activity, observation, testing, expression and communication, and lastly, individual and team work.
It will be easy enough to prepare a list of teaching aids available in the class-room: textbooks, sundry equipment, audiovisual aids, etc.

What is the average cultural and progessional level of teachers in the different teaching categories? Are they sufficiently masters of what they teach? What subjects give them the greatest difficulty? Are they really aware of the pedagogical problems which they encounter in teaching? It is essential to determine the common denominator of pedagogical knowledge, for that is the level at which further training and retraining should start.

To what extent are teachers actively in favour of educational chances, especially chages affecting teachers themselves? Are they aware of the

importance of their role for the future of their country? What reception would be given to a plan for in-service teacher training? Are teachers anxious for social promotion, and what do they regard as an increase in pay corresponding to such promotion?

Education must be a factor of economic and social progress, it must encourage development. This implies, first of all, acceptance of those changes in the structure, aims, and approach of education, as well as in the methods which enable it to play this catalytic role. But teachers--many of whom are characterized by their submission to authority, formalisim and rigid and stereotyped thinking--are also hostile to educational change or to everything that seems to them unusual. All these factors could be investigated in detail.

What instructors are likely to be available? And in what kind of administrative set-up will they work? Choosing those responsible for the proposed training is highly important. The results will depend on their competence, professional conscientiousness and determination. This fact has given rise to the idea of training level by level, beginning with the instructors. First, one must evaluate the supervisory and training staff, the primary-school inspectors and others, assess their ability to rise above detail and to concentrate on the essential advice needed to improve the professional level of teachers. After that, a decision will be taken as to the advisability of recruiting and training instructors specialized in in-service teacher training. In this case the question of the level at which they will be chosen arises, the methods which will be used to train them, and the status they will enjoy.

On the administrative side, is the government prepared to organize the appropriate structures: a national training centre, regional training centres, a teachers' institute, demonstration schools, mobile teams, television courses?

How will responsibilities be shared and how can efforts be co-ordinated? Can the staff of the Ministry of National Education work with the staff of other departments (health, agriculture, stock-breeding, development, etc.) who are concerned with the programme, and with experts from international organizations (WHO, ILO, FAO, UNESCO)?

Could the regulations governing teachers be modified in such a way as to make it easier for teachers in one category to be promoted to another in recognition of their work? Is it possible to have an accelerated form of training during the school year? And, if so, in what conditions (Duration of courses, premises, instructors, administration; replacement by subsitutes or closing down of classes)?

The learning of environmental concerns by the young

The literature under the heading environmental education for younger age range, prior to the mid--1960s, reveals that only limited attention has been paid to environmental concerns either in formal or informal learning situations.

In the late 1950s and in the early 1960s, there emerged on intensive concern with the development of science and mathmatics education. A multitude of efforts at curriculum development in the field of science and mathmatics education in the school is seen throughout the world. To the extent that such efforts focused on learning by doing, exploratory activities by the learner and variety or other imaginative modes of learning, the design of these learning sequences reflected a diversity of concerns with biophysical environment. In the same period, in the early 1960s, the concern limited in an earlier phase to science and mathmatics was extended to other areas of the school curriculum such as social studies and language learning. This reflects an extension of concerns to human and social environment.

The initial focus of attention in environmental education world-wide was clearly in the field of conservation of natural resources. A variety of documentary material was produced relating to conservation activities, field strip, nature trails and other such studies linked to conservation of natural resources. Attention is usually concentrated on animal life, plant life, conservation and protection of water resources and related themes. Thus, increasingly one finds a variety of special guidelines suggesting ways and means of using the urban biophysical environments for the presentation of significant problems to young teachers in the schools. In relation to the rural areas, the concern still relates to nature conservation and nature studies in the traditional modes. A few significant guidelines are available for exploring the country side with more concern for changes in the environment as a whole.

The above literature was supposed to be related to this study. Research on primary science I-III in Somalia has not been fully undertaken, finally, there is hardly any Somali based literature on it. Literature on the qualitative-aspects of primary science teachers is not available. Science in Somalia is based on the traditional approach, moderns science teaching methods like the Nuffield and SEPA approach were not yet implemented.

CHAPTER II

Design of the Study.

As already mentioned in Chapter I this study is aimed at reviewing the content of primary I-III science curriculum in Somalia, the Instructional material that back up the content and methodologies, techniques adapted by teahcers and the professional competence of the teachers in charge of teaching this subject in the classes.

2.1. Description of Population and Sampling

In order to undertake this study an emperical approach was adapted. Information was obtained from the following groups of professionals who were connected with the teaching of science in Primary schools of Somalia. These are:

(a) Teachers of Schools
(b) Inspectors of Schools
(c) Curriculum developers.

These people were chosen because they were responsible for the development and monitoring of the science curriculum follow up and monitor the teaching of science with a view to ascertaining the relevance of the program to the needs of the pupils, determining weakpoints with view to improving the situation. The teachers are actually the implementers of the science curriculum in the schools to ensure effective learning. These categories of people are therefore well placed, because of their association of science curriculum to make valuable comments on its strengths and its weaknesses and to suggest possible improvements.

Having decided upon population, it was important to isolate a manageable sample of each of the three population strata. Science every member of the group cannot be used in the study. However, since the numbers of Inspectors and curriculum developers are generally small all the inspectors

and curriculum developers were subjects in this study. There were, according to 1981 education statistics, 1,4800 primary teachers in Somalia primary education system. In order to take a manageable sample, 300 primary science teachers were randomly selected. Consequently, the sample for the study was made up as in table 1 below.

TABLE 1

Study Sample

POPULATION	ACTUAL NUMBER	SAMPLE	%
TEACHERS	14,800	300	2%
INSPECTORS	80	20	28%
CURRICULUM DEVELOPERS	60	20	33%
TOTAL	15,940	340	2.3%

Although the subject of the sample listed above consists of female and male persons, in the data collection, no differentiation was made between them. Furthermore, the population live both urban and rural areas. Because of the effect that the learning environment may have on the learning abilities of the pupils and the motivation of the teachers and hence their output, it was necessary to distinguish between the study subjects living in these two environments. In view of this observation systematic sampling was used in some cases while stratified samping techniques was used in selecting the urban and rural study subjects.

Somalia is large territorially. To select a sample of teachers from all the regions of the country would entail extensive travelling. Time and financial constraints would not permit such as exercise. Therefore the study area was delimited to the schools within a radius of 50 kilometres around Mogadishu.

There was a total of 80 schools within the study area. 50 of this were urban and 30 were rural. For purpose of study a sample of 50 schools were selected in the proportion of 50 urban and 30 rural as table 2.

TABLE 2

Sample Schools

Schools	Urban	Rural	Total
Total Nos.	50	30	80
Sample	30	20	50

50 schools were selected from the population, this representer 62.5% of the primary schools in Mogadishu and other districts. To select the teachers who would participate in the study the following procedure was used, firstly, 50 urban and 30 rural schools were listed in serial order each of them being given number 1,2,3,4,.....80 each number was written on small card, the first 50 numbers representing the urban schools were put into a basket while the 30 remaining rurals schools were put into second basket, 30 urban and 20 rural schools were selected. Secondly after selecting 50 sampling schools the STD 1 to 3 teachers in these schools were listed serially on the two subdivisions of the urban and rural schools. Using the systematic sampling procedure is selecting schools the 300 teachers in the sampling were selected. Thus study sample was as in Table 3.

TABLE 3

Selection of teachers Samle

Particular	Urban	Rural	Total
Sample Schools	30	20	50
Teachers	180	120	300

The teachers were selected from classes 1-3 in 50 schools. Within these 50 schools a total of 150 classes i.e 50 primary I, 50 primary II and 50 primary III from each of the 150 classes two teachers ere randomly selected. In this way the teachers sample was distributed as in table 5.

TABLE 4

	Urban	Rural	Sample
Primary I Teachers	60	40	100
Primary II Teachers	60	40	100
Primary III Teachers	60	40	100
Total	180	120	300

2.2. Instruments of Data Collection

A questionnaire, winend observation and unstructured interviews were the instruments for data collection used for this research..

Questionnaire,

Alist of planned , written questionnaires were constructed. It consisted of the following categories:

1) Evaluation of the Course Content
2) Finding out of the relevance of teaching materials

The questionnaires were prepared in Somali and then translated into English since the medium of instruction is Somali. Then the draft was given to experts for validation and its reliability estimation. This was to check the clarity and the relevance of questionnaires as valid tools for gadhering data. After the necessary correction - the questionnaires were administered for as tryout to selected groups of teachers.

Again some of the items were improved and the questionnaires were improved in a final form the feed-back of the pilot try out.

Direct Observation

To assess the qualitative suitability of primary I-IIIscience teachers, it was needed that, the researcher visit a sample of schools to make classroom observation to assess the pupil/teacher interaction in the teaching/learning of science.

Also the researcher visited the Halane Teachers training college a) to observe teaching/learning of science by the students. b) to evaluate the uses of the science laboratiories. c) and to assess the syllabi of the teachers colleges.

Unstructured Interviews

Unstructured Interviews was held by researcher with some science expert who are actively involved in the development of primary science educati

These include two primary science inspectors, two curriculum developers and other two headmasters in primary schools.

2.3. Administration of the Questionnaire

The questionnaires were sent to the teachers through their headmasters, by post, with covering letter to the headmaster informing the aims of the study. It was stamped, and then an envelope written on the right address was enclosed to return the questionnaires.

CHAPTER III

DATA ANALYSIS

Introduction:

As already indicated in Chapter I, This study was conducted in order to find out the need of up dating the primary I-III science curriculum interms of.

a) studying the content of primary I-III science curriculum interms of theoretical constructs, its level of diffently.
b) Studying whether the resource materials support the teaching/learning strategies.
c) Evaluating the qualitative suitability of primary I-III teachers.

This chapter will present the responses collected from the questionnaires that had been given to the science teachers. As mentioned earlier in chapter II the questionnaires were distributed to school teachers in Mogadishu and near by schools.

3.1. Results of question One.
Teacher's Evaluation of science content- Responses; Table 5

Teacher's Evaluation	School	
	Urban %	Rural %
Strongly agree	2%	--
Agree	3%	2%
Undecided	30%	22%
Disagree	43%	45%
Strongly disagree	22%	31%
Total	100	100

N=110 for Urban and N = 89 for rural (teachers).

In table 5, it can be seen that majority of both Urban and rural teachers disagreed or strongly disagreed the content of the primary I-III science.

3.2 Result of Question two.

Responses; Table 6

Teacher's Evaluation	School	
	Urban %	Rural %
Very interesting	—	—
Interesting	15%	9%
Uninteresting	49%	53%
Very interesting	21%	16%
Undecided	15%	22%
Total	100%	100%

N= 112 for Urban and N= 90 for Rural (teachers)

In table 6, it can be noted that 49% of the Urabn teachers and 53% of the Rural teachers found lack of interest in the subject while they were teaching to their pupils.

3.3. Result of question three

Responses: Table 7

Teacher's Evaluation	Schools	
	Urabn %	Rural %
Very difficult	11%	13%
Difficult	38%	45%
Fair	33%	30%
Easy	18%	12%
Total	100	100

N= 109 for Urban and N= 83 for Rural.

It can be noted that both majority of urban and rural teachers had met difficulty in teaching science units.

3.4 Result of question four

Responses: Table 8

Teacher's Evaluation	School	
	Urban %	Rural%
Too much	1%	---
Right amount	33%	36%
Too little	66%	64%
Total	100	100

N= 114 for Urban and N= 8 for Rural

61% and 64% bodh Urban and Rural teachers responded that the quantity of the primary I-III science syllabus needs Extension.

3.5. Result of question five responses. Table 9

Teacher's Evaluation	School	
	Urban	Rural
Difficult	38%	39%
Appropiate	34%	37%
Easy	28%	24%
Total	100	100

N= 116 for urban and N= 85 for rural.

The results of this question showed that 38% and 39% of the Teacher's responses towards the level of the Somali Language used in the textbook was difficult while 34% and 37% of the teachers responded that the Somali langauge used in th book was appropiate, what is to be noticed is that more formal lingthing different than easy.

3.6. Results of question six responses Table 10.

UNIT	VERY DIFFICULT	DIFFICULT	AVERAGE	EASY	%
1.Measurement	20%	36%	33%	11%	100
2.Weight	9%	42%	35%	16%	"
3.Soil	3%	45%	46%	6%	"
4.Rocks	4%	36%	42%	18%	"
5.Flowering Plants	1%	32%	43%	26%	"
6.Water	---	30%	41%	29%	"
7.Animals	6%	38%	30%	26%	"
8.Air	16%	43%	29%	12%	"
9.Blance	19%	36%	36%	9%	"
10.Weather	12%	44%	28%	16%	"
11.Stars	5%	53%	31%	11%	"

N= 111 for Urban and N= 88 for Rural

The above responses are given by both the Urban and the Rural teachers units such as measurement, weight, Air, Balance, Weather and Stars were found to be difficult ones. While units such as soil, rocks, flowering plants, water nad animal were more or less fair. the former group deal with less concrete topics than the latter.

Respones on the relevance of Instructional materials,

3.7. Results of question seven.

Respones Table 11

Teacher's Evaluation	School	
	Urban	Rural
Its helps much	6%	3%
It helps	31%	39%
It does not helps	63%	58%
Total	100	100

N= 102 for Urban and N= 90 for Rural.

The responses given by this question showed that the environment had little help to the teaching/learning of science to the pupil. Therefore, the utilization of the environment to help the pupil in teaching/learning science is needed.

3.8. Results of question eight.

Responses: Table 12.

Teacher's Evaluation	School	
	Urban	Rural
Yes	29%	32%
No	71%	68%
Total	100	100

N= 114 for Urban and N= 90 for Rural.

From the responses given by the teachers it is clear that, most of the school have few gardens that take place within the teaching-learning of the pupils in science lessons.

3.9. Results of question nine

Responses: Table 13.

Teacher's Evaluation	School	
	Urban	Rural
I omit the activity	20%	22%
I make myself if I can	29%	30%
I report to the headmaster who then assists in making the teaching aids available	23%	23%
I ask the pupils to make them if this is possible	28%	25%
Total	100	100

N= 110 for Urban and N= 89 for Rural.

Further reveal is needed to determine the kind of atternate aids made up with in the school.

3.10. Results of question Ten.

Responses: Table 14.

Teacher's Evaluation	School	
	Urban	Rural
Very appropriate	--	--
Appropriate	18%	22%
Inappropriate	45%	43%
Uncertain	33%	35%
Total	100	100

N= 111for Urban and N= 86 for Rural.

In this responses it can be noted that majority of the teachers both in urban or rural had negative attitude in the appropriateness of the teaching aids, Therefore, it can be seen that the teaching aids are inadeguate or too demanding.

3.11. Results of question Eleven.

To list the different kinds of visuals aids available in schools.

The responses given by the teahers were different accordingly to the location, most of the teachers in the rural areas schools responded that they had no aids, while many teachers of the urban schools also mentioned that they had no any aids. Below is listed the kind of few aids that some schools have:

1. Seeds
2. Water
3. Papers
4. Trees
5. Spray
6. Ruler
7. Clors
8. Ball
9. Bottles
10. Soil
11. Leaves
12. Flowers
13. Stones.

3.12. Results of question twelve.

To give suggestions if they were not satisfied the way the environment helped the pupils.

The responses given by both urban and rural teachers were many but they were overlapping, the common issues are written below.

1. The school environment should include grown gardens, in order that, pupils should see and learn the different plants.
2. It is suggested the Ministry of Basic Education should complete the missing parts aids and materials that are needed for simplification of teaching/learning of the pupils.

3. It is suggested that teachers should him-self bring aids that helps the lesson that he is going to teach.

4. It is suggested the teachers should take their pupils to nearest place or environment where could they learn when the teaching takes places.

5. It is suggested that the Ministry of Basic Education should bring transport in order that pupils should be taken to the sea, ships, e.t.c. and other places which are helpful to the teaching/learning of the pupils.

6. It is suggested that, it should be made such handicrafts, board, models and charts showing the stars and animals in order that pupils visualize of what they are being taught.

7. In order that, the pupils to have conservation of what they are taught to them, the Ministry of Basic Education should bring aids to the Schools.

8. There are distractions of the environment it-self, because the schools were built just on the side of the high ways where trucks are moving every time or the schools were built along the routes of the planes, so both the planes and trucks disturb the teaching/learning of the pupils, so it is suggested that better schools sites be found.

Direct Observation

The question of the qualitative suitability of the teachers is difficult to assess by questionnaires of similiar devices, it was therefore, necessary to look first at the training received by primary school teachers a) in general and b) specifically in relations to science teaching.

The majority of 14,800 of the present primary teachers population were crash-trained at Halane teacher training college when universal primary education was introduced in Somalia. This training was for one year, further, the entry qualification to H.T.T.C. is primary school completion, this whatever training received is generally devoted to content up grading.

4.2.1 Responses from class-room Observation

Seven schools were visited, but it was possible only to observe five science classes.
These school were 1) Shibis , 2) 1 Maajo 3) Kacaan 4)Sheekh Madar 5) Xaawo Taako upper primary schools.

The Observerís Investigation consisted of the following criteria.

a) Teachers knowledge of topics.
b) Teachers use of questioning.
c) Teachers use of demonstration.
d) Teachers use of Material.
e) Teachers Organization of pupils activety.

The Table below indicated that
5= very good, 4=good, 3=fair , 2=poor 1=very poor

Table 15

Criteria / Schools	Know.	Quest.	Demons.	Mat.	Activates
Shibis	3	2	1	3	1
1 Maajo	3	2	1	3	1
Kacaan	3	2	1	3	1
Sheekh Madar	3	2	1	3	1
Xaawo Taako	3	2	1	3	1
Average	3	2	1	3	1

Comments:- from direct observation it can be seen that, the use of demonstration and pupil's activites showed the weakest points of the class-room activities. What the investigator noticed was that, the teacher was confined to the text. The teacher was just a chalk-talker. There was too much reading with few illustrated text, the guide, books were not available or unrealistic.

Thus, there was too much dependency of the students of the teachers and too much dependency of the teacher to the text.

4.2.2. Halane Observation:-

The investigator visited teachers training college to assess the syllabi of the teachers college. The criteria investigated by the researcher were as follows.

a) Science related to syllabi
b) Variety of methodology
c) Student project work
d) Student teachers practice
e) Making of aids.

The table below indicates that
5= Very good, 4= good, 3= fair, 2= poor and 1= very poor.
where B,T, J, X, KH are teachers training colleges in Halane.

Table 16

Criteria / Colleges	Syllabi	Methodology	Project Work	Teacher Practice	Aids
B	3	1	1	2	1
T	3	1	1	2	1
J	3	1	1	2	1
X	3	1	1	2	1
kh	3	1	1	2	1
Average	3	1	1	2	1

Comment:- From here it can be seen that, the variety of methodology, the student project work, and making aids were the weakest points.

The general dissatisfaction with demonstration and aids lies in the fact that the apparatus had not been made available in colleges, thus, the students were suffering lack of inability of improvisation, insufficient practical skills, the tendency of creativity. The weakinesses that had been observed was the ridigity of thought process and lack of insight.

Science Laboratory Observation:-

The criteria that the investigato evaluated in the science laboratories were as follows:-

a) Number of laboratories
b) Number of periods in use
c) Laboratory assistants
d) Equipment in laboratories
e) Supply of materials-budget

The table below indicates that, 5= very good, 4= good, 3= Fair, 2= poor 1= very good.

Table 17.

Criteria / Colleges	No.of Labor.	Periods Per week	Equip	Lab .ass.	Supply
B	2	2	3	2	2
T	2	2	3	2	2
J	2	2	3	2	2
X	2	2	3	2	2
KH	2	2	3	2	2
Average	2	2	3	2	2

Comment:- From here it can been seen that, there was a shortage of laboratories and equipments, the weakiness in the Teaching/learning strategies was that the number of students were too large while the number of laboratories are only a few.

The Supporting technicians and the supplies were also insufficient, and since Somalia does not have any equipment scheme. The supplies are imported from overseas and here the equipment are not commercially available or they might take time to arrive home. on the other hand, if kits are damaged or broken it is no more in use, due to lack of repairings.

Observation of the Syllabi.

The observation consisted of the Evaluation of the three main points.

a) Content

b) Methodology

c) Science - education.

During the training, the teachers are taught science; the curriculum is a selection of topics from the secondary syllabus this syllabus is from I, to from IV, divided into physics, chemistry and biology.

Thus there is no total general science approach; further, the focus is on content learning, there is no training in teaching of science at primary level, thus the teacher leaving Halane, has only the possibility of a good syllabus or textbook and guide to help him.

Therefore the knowledge learned by the teachers in Halane merely is confined to syllabus contents and hence is knowledge of mainly theoretical in which the learner can develop tendency to remember rather than being creative.

Methodology:- the method of teaching science in Halane is not appreciative; the approach is traditioneal one, in which the teacher is the centre of the know-ledge. Thus, the inability of the student to improvise withs aids, lack of creativity, lack of imagination and insight, and inability to apply knowledge in a new situations was what mainly the investigator noticed in Halane teachers training.

Another further research showed that only 1/12 of periods is for methodology in Halane, with no periods for science education. Thus, comments said that the methodology in syllabi in Halane had the greatest weakinesses.

Science Education.

No science - education classes are offered in Halane Training, the sciences subjects are taught, this shows lack of application of science knowledge in teaching by the students when going back to primary schools and therefore, if it can be said that most of the teachers teach the way they them-selves were taught, it can be understood why they did not take a more progressive approach to science teaching.

Thus the teacher is poorly equipped to deal with science teaching in the class-room. Whatever good science teaching that is done is usually the natural talent or the teacher himself . It can be safely said therefore that the qualitative suitability of the teacher is below what couldbe minimally expected for science teaching at lower primary level.

Responses from the Interviews.

Responses were received from Inspectors, curriculum developers and headmasters, who are actively invoved in the primary science curriculum. The following responses were collected:

1) Resource meterials were found to be lacking in most schools, but the older schools were found to be generaly better at improvisation than the majority of the schools that were newly built (the self help schools) during the universal primary education in 1976.

2) There are no science inspectors in the central inspectorate of the Ministry of basic education who follow up and monitar the teaching of science in the schools..

3) The teachers themselves are crash-trained, besides they had no at all any retraining courses, therefore the level of the knowledge of the of the teachers is below average.

4) The content, the methodology of the primary science curriculum, needs extension, simplification, and further development.

CHAPTER IV

SUMMARY AND RECOMMENDATION

4.1. Summary

This study was conducted to examine the effectiveness of primary I-III science curriculum interms of

a) studying the content of primary I-III science curriculum interms of theoretical constructs.

b) Its nature of difficulty.

c) Studying whether the resource materials support the teaching/learning strategies.

d) Findings of the qualitative suitability of primary I-III teachers.

The study sample consisted of

a) Primary I-III science teachers

b) Malane Teachers Training Principals, teachers.

C) Curriculum developers; Inspectors, and headmasters.

There was a total of 80 schools within the study area. 50 of this schools were urban and 30 were rural, to select the teachers who would participate in the study the folowing procedure was used, firstly, the first 50 number representing the urban shcools were find into a basket while the 30 remaining rural schools were put into second basket, and by using the systematic sampling method, 30 urban and 20 rural schools were selected.

Finaly, using the systematic sampling method in selecting schools the 300 teachers in the sampling were also selected. The study used the following instrument for data collection

a) questionnaires

b) Direct observation

c) Unstructured interviews.

Due to lack of computer, all the analysis was done by the researcher manually.

4.2. Summary of findings

The primary I-III science curriculum is poorly taught in all the schools. That the study was conducted. The following defects regarding they primary I-III science curriculum are found to be.

1. The level of the content was difficult to the pupils to grasp its concepts, thus the pupils to lack the interests of science and lose curiosity.
2. The improvisation of materials such as textbooks, teaching aids are inadequate, therefore, the experimentation is hardly conducted in the lessons.
3. The textbooks have only few illustrations and they are not available to all pupils in the schools.
4. The level of the language used in the textbooks were difficult, therefore, simplification of the language in the use of textbooks is needed.
5. The content of the material that supposed to be taught within the needs extension.
6. The school environment is not utilized, and ~~most of~~ there are few the schools gardens.
7. The teachers are crash-trained, and their level of knowledge is below the average.
8. The teachers are not offered retraining courses, thus, their level of knowledge remains low.
9. The teachers training colleges needs development in many aspects, such as a) The utilization of laboratories.
   b) laboratory techincans.
   c) The syllabi interms of
   d) content and methodolegy.

4.3. RECOMMENDATION

In view of the findings of this study, the following recommendation are made:

1. The content of primary I-III science syllabi should be reviewed, and development should be made interms of
   a) topics and difficult concepts.
   b) Extension and simplification should be made to it.

2. Great efforts should be taken to make up the deficiencies of the school improvisation of the materials and equipments.

3. Primary science teachers should be given adequate background in science and the Ministry of Education should organise and offer in-service courses to the primary science teachers.

4. The laboratories should be effectively utilized in the teachers training colleges, and more equipment should be brought to it.

5. Development should be made in the content and the methodology of the syllabi of the teachers training colleges.

4.4. Recommendation of Primary I-III Science

1. The main objective in standard I science is to make pupils aware af their immediate environment.

2. The method to be adopted should be the collection of items from the environment for study.

3. The science syllabus should be closely related to the occupational environment. That is during the planting season the pupil should discuss and experiment with planting.

4. Thus there can be no syllabus for standard I. However Idea booklets should be produced for the teacher to show him/her how to make the pupil actively participate in basic scientific processes.

5. The skills to be nurtured should be
   a) Observation of physical phenomena
   b) Discussion of characteristics physical phenomena.
   c) Collection of great variety of objects for observation and discussion.
   d) Displaying of scientific processes e.g. plants, stones, different types of soil. etc.
   e) Naming of the characteristics of objects soil and human body. etc.

Standard 2 : on this standard more formal approaches will be mode. Definite topics will be chosenby the teacher. However, the starting point will still be the pupils immediate experience.

Major concept to be introduced.
a) classification
b) life cycle.
c) Measurement (volume,size, weight)

The text book for this standard should focus of those topics from the pupils environment but with a systematic approaches encouraging the pupils to do their own experimentation. Units for study should be:

The air we breathe.
The water we use.
The food we eat.

Standard 3:

By this standard pupils should have the basic skills necessary for scientific experimentation. The process of observing, recording, experimenting and deducting should be well established in the classroom. Group work should be the main activity, following on teacher demonstration. In form of the environment scope should be widened and more formal study made of:

-- Vegetation plants
Fruits
Trees

-- Animal and insect life.

-- Weather.

-- Soil

-- Human Body.

Again stress should be on active pupil discussion. With reference to the human body, for instance, there should not be any learning the parts of the body; rather the unit should study the body from the point of view of ~~section~~ structure, health, growth, and related to social study aspects of difference races, characteristic etc.

APPENDIX I

Questionnaires for the teachers.

1. Preliminary Information
2. District in which the school is located.....
3. Province in which the school is .....
4. Class in which the teacher is teaching.....
5. Sex.....
6. Teaching experience in years.....
7. Qualification.....

Evaluation of the course Content.

1. How do you judge the content of the primary I-III science curriculum?

   a) Strongly agree _____
   b) Agree _____
   c) Undecided _____
   d) Disagree _____
   e) Strongly disagree _____

2. How interesting have your pupils found the science unit in which you have taught?

   a) Very Interesting
   b) Uninteresting
   c) Very interesting
   d) Undecided

3. How difficult do you find to teach the different science units?

   Very difficult
   Difficult
   Fair
   Easy

4. How do you judge the amount of the content of primary I-III Curriculum in which you teach?

   Too mush

   Right amount

   Too Little

5. How do you rate the level of Somali used in the pupil book?

   Difficult

   Appropriate

   Easy

6. How successfully do you think the pupil understand the The concepts or the unit?

Unit	Very difficult	Difficult	Average	Easy	Σ
1. Measurement.					
2. Weight					
3. Soil					
4. Rocks					
5. Flowering plant					
6. Water					
7. Animal					
8. Air					
9. Balance					
10. Weather					
11. Stars					

Relevance of Instructional Materials.

7. To What extent is the school environment able to help the pupil understand in units?

a) It helps much

b) It helps

c) It does not help

8. Is there a school garden in your school?

Yes

No

9. When the teaching aids are not available, what do you normally do?

a) I omit the activity

b) I make them myself if I can

c) I report to the headmaster who them assist in making the teaching aids available.

d) I ask the pupils to make them if this is possiple

10. How appropriate are suggested teaching aids for the different units?

a) Very appropriate

b) Appropriate

c) In appropriate

d) Uncertain

11. List the different kinds of visual aids available in your school.

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12. If you are not satisfied the way the environment helps the pupils, what suggestions do you give?

SUAA'AALAHA BARAHA SAYNISKA AH EE FASALLADA 1-III

Warayai guud.

Fadlan waxa lagaa codsanayaa in aanad ku qorin magacaaga warqadan.

1) Magaca dugsiga----------
2) Degmada Dugsiga uu yahay----------
3) Gobolka----------
4) Fasalka----------
5) Lab ama dhedig ka aad tahay----------
6) Muddaad wax dhigeysay----------
7) Shahaadahaaga----------

Fadlan Jawaabahan soo socda tii aad u boto jiitin ku hor qor (/)

QIIMEYNTA MAADADA AAD DHIGTIJ EE SAYNISKA AH

1) Siduu kula yahay manhajka ama muqarrarka sayniska ee fasallada 1-3 ee dugsiyada hoose.
   a) aad ayaan ugu boggay ( )
   b) waan u boggay ( )
   c) go'aan kama gaadhi karo ( )
   d) uma boggin ( )
   c) aad uguma boggin ( )

2) Siday ardadu u jecelaystaan casharadda sayniska.
   a) ma jeclaystaan ( )
   b) way jecelaystaa ( )
   c) aad ayey u jecelaystaan ( )

3) Siday kugu muuqataa dhigista sayniska ee qaybaha kala duwan
   a) aad ayey u adag tahay ( )
   b) caadi ( )
   c) Way fudud tahay ( )

4. Siduu kula yahay Xaddiga qaybaha sayniska fasalada 1-3 ee aad dhigtid
   a) aad ayuu ila badan yahay ( )
   b) ku filan ( )
   c) waa ku yaryahay ( )

5. Siduu kula yahay heerka af soomaaliga ee lagu isticmaalay buuggaga ardada fasalada 1-3 ee sayniska.
   a) aad ayuu u sarreeyaa ( )
   b) waa ku haboon yahay ( )
   c) waa sahlan yahay ( )

6. Siday kula tahay ardada fahamkoodu iyo garaashadooda qaybaha sayniska

Qaybaha	Aad ayey ugu adag tahay	Waa ku adag tahay	caadi	way u fudud tahay
Biyaha				
Hawada				
Carrada				

Dhagaxanta

Xayawaanka

Cayayaanka

Dayaxa iyo xiddigaha

Cilmiga

Dhirta

Kulka

Uumiga

7. Deegaanka Dugsiga sidee buu kaalmo ugagageystaa fahamsiinta ardayda duruustooda sayniska ah.
   a) aad ayuu u kaalmeeyaa ( )
   b) Waa kaalmeeyaa ( )
   c) Ma kaalmeeyo ( )

8. Dugsiga Beer ma leeyahay?
   Haa ( )
   Maya ( )

9. Marka aanad haysan qalabka kaalmeeya waxbarashada (Tijaabooyinka) sayniska, maxaad sameysaa?
   a) Wax qabashada waan ka saaraa meesha ( )
   b) Waan sameeyaa haddaan kari karaayo ( )
   c) Waxaan u sheegaa maamulaha kaasoo nagu kaalmeeyo helitaankooda ( )
   d) Ardayda ayaan iraahdaa sameeya hadday awoodaan ( )

10. Sidee ayey ugu habboon yihiin qalabka waxbarashadu qaybaha kala duwan ee duruusta sayniska.?
   a) Aad ayey ugu habboonyihiin ( )
   b) Waa ku habboon yihiin ( )
   c) Kuma habboona ( )

Qalabka Caawiya Waxbarashada Sayniska

11. Qor qalabka caawiya waxbarashada sayniska fasallada 1-3 ee dugsiga.

12. Haddii aanu degaanku wax kaalmo ah ka qaadan waxbarashada ardayda maxaa talooyin ah aad soo jeedin lahayd?

APPENDIX 2

Primary School: Integrated Curriculum

Language
reading, planting instructions
recipes
gardening vocabulary.

Writing: Stories, reports
Descriptions
Pupil-made booklets

Speaking: one reports
discussion
meeting

Maths/Science
Maths: Measurement,
plot-layout, planting
depth.
area, weight,
volume, etc.
Estimation:
Computation of
numbers of plants
per row, etc,

Science: Plant growth experiments
Plant/insect observations.
Water/soil/light relation
pest control
fertilizer effect etc.

A
SCHOOL
GARDEN

Agriculture: Planting
procedure
cultivation
soil preparation
protection of
plants
use of tools.

Home economics: Nutrition
Cooking
food preservations

Arts/crafts: Drawing/Modeling
of bird, insects
plants.

Physical Education:
Exercise/work

Social Studies: Cultural
aspects of crops,
Transport of
crops
learning to work
as team,
Developing positive
attitudes toward
work.

Economics: marketing price,
profits/loss
supply/demands
Cooperatives.

APPENDIX 3

Primary school curriculum and period allocation.

The following is the recommended curriculum and period allocation for the primary schools:

Standard	S_1	S_2	S_3
Length of period	30	30	35
Arabic	5	5	5
Religion	3	3	3
Mathmatic	5	5	5
Somali	8	8	8
Social studies	2	3	3
Science	3	3	3
Civic	-	2	2
Physical Education	2	2	2
Art and crafts	2	2	2
Total	32	33	33

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